

MAY 12, 1978

THE SUN AND VOA

ANNCR:

MANY LISTENERS TO THE VOICE OF AMERICA AND OTHER SHORTWAVE RADIO BROADCASTS AROUND THE WORLD HAVE BEEN EXPERIENCING DIFFICULTIES RECENTLY WITH THE RECEPTION OF THE PROGRAMS. VOA SCIENCE EDITOR LASZLO DOSA OFFERS THIS EXPLANATION.

VOICE:

THE SUN IS BEING UNKIND TO SHORTWAVE BROADCASTERS -- AND LISTENERS -- THESE DAYS. INCREASES IN SUNSPOT ACTIVITY, ACCOMPANIED BY THE ERUPTION OF SOLAR FLARES, HAVE CONSPIRED TO DISRUPT SHORTWAVE RADIO SIGNALS.

SUNSPOTS ARE DARK BLEMISHES ON THE FACE OF THE SUN. THEY USUALLY OCCUR IN CLUSTERS, PROBABLY CAUSED BY LITTLE UNDERSTOOD EVENTS INSIDE THE SUN. THE SUNSPOTS ARE SEVERAL THOUSAND DEGREES COOLER THAN THE SURROUNDING AREA. THIS IS BELIEVED TO BE DUE TO THE STRONG MAGNETIC FIELDS WHICH ARE PRESENT AROUND SUNSPOTS.

GALILEO WAS THE FIRST MAN TO SEE THE SUNSPOTS WHEN HE AIMED HIS TELESCOPE AT THE SUN. OVER THE YEARS, THEY HAVE BEEN OBSERVED MANY TIMES AND ASTRONOMERS HAVE FOUND THAT THE SIZE AND SHAPE OF THE SUNSPOTS KEEPS CHANGING. THEY COME AND GO IN ELEVEN-YEAR CYCLES AND WE ARE NOW AT A PHASE IN THE CYCLE WHERE SUNSPOT ACTIVITY IS ON THE INCREASE.

SUNSPOTS ARE OCCASIONALLY ACCOMPANIED BY SOLAR FLARES -- ERUPTIONS OF ELECTROMAGNETIC RADIATION, AS WELL AS BIG CHUNKS OF MATERIAL, FROM THE SUN. THE ELECTROMAGNETIC RADIATION, TRAVELING AT THE SPEED OF LIGHT, REACHES THE EARTH IN LESS THAN TEN MINUTES. ITS IMMEDIATE EFFECT IS TO DISRUPT THE IONOSPHERE WHICH ORDINARILY SERVES AS A BARRIER TO SHORTWAVE RADIO SIGNALS,

FORCING THEM TO FOLLOW THE CURVATURE OF THE EARTH. WHEN THE IONOSPHERE IS DISRUPTED, MANY OF THESE SIGNALS ESCAPE INTO SPACE, INSTEAD OF GOING TO YOUR RECEIVER.

THE PARTICLES THROWN OUT BY THE SOLAR FLARES ARE CARRIED BY THE SOLAR WIND WHICH FLOWS CONTINUOUSLY OUTWARD IN ALL DIRECTIONS FROM THE SUN. SOLAR FLARES INCREASE THE DENSITY AND SPEED OF THE SOLAR WIND AND, AS THE PARTICLES REACH THE EARTH'S MAGNETOSPHERE ABOUT A DAY LATER, THEY CAUSE MAGNETIC STORMS. MAGNETIC STORMS ALSO INTERFERE WITH SHORTWAVE RADIO COMMUNICATIONS AND THE RESULTING DISRUPTION MAY LAST FOR SEVERAL DAYS.

VOICE OF AMERICA ENGINEERS ADVISE US THAT THERE IS NO DEFENSE AGAINST THE ANNOYING EFFECTS OF SUNSPOTS AND SOLAR FLARES. THE ONLY CONSOLATION IS THAT IN A FEW DAYS, THE PROBLEM GOES AWAY BY ITSELF AND YOU WILL BE ABLE TO LISTEN ONCE AGAIN TO YOUR SHORTWAVE PROGRAM UNTIL THE SUN STARTS ACTING UP AGAIN.

GH/RCS